

## **REMARKS**

To ensure a complete and accurate record, Applicant is filing an Information Disclosure Statement with this Reply, citing JP 05311385, which appears to correspond to JP 40531185, cited in the Office Action.

The Examiner rejected claims 11 and 12 under 35 U.S.C. § 112, second paragraph for containing informalities related to antecedent basis. Applicant has amended claims 11 and 12 to correct informalities related to antecedent basis. With respect to recitation of “the supply of the powdery material” in claim 11, claim 6 provides antecedent basis by reciting “supplying a powdery material into a swirling chamber.”

Applicant respectfully traverses the 35 U.S.C. § 102(b) rejection of claims 1-3, 6 and 11 over Kinoshita et al., Japanese Patent No. 10286687 (“Kinoshita”). In order for a reference to anticipate a claim, the reference must disclose, either expressly or under the principles of inherency, each and every feature of the claim purportedly anticipated. See, for example, MPEP § 2131.

Regarding amended claims 1-3, 6 and 11, Kinoshita does not disclose each and every feature of amended claim 1-3, 6 and 11. Kinoshita does not disclose at least a laser-processing head that includes a coaxial nozzle comprising a powdery material supply, a swirling chamber, and a rectifier, configured to provide the powdery material in a direction substantially parallel to a central axial line of a valve seat portion in an equal amount across a process part of the valve seat portion, as recited, e.g., in amended independent claim 1. Kinoshita likewise does not disclose at least the step of supplying a powdery material into a swirling chamber, and rectifying a swirling flow of the powdery material to flow in a direction substantially parallel to a central axial line to be provided in an equal amount across a valve-seat portion while holding a laser-processing head in

an inclined orientation with respect to a vertical direction and rotating the laser-processing head around the central axial line of the valve seat portion, as recited in amended independent claim 6.

The Office Action relies on Kinoshita to disclose a laser-clad processing apparatus for carrying out laser-clad processing onto a valve seat portion of a cylinder head. As seen in Kinoshita Fig. 1-5, however, Kinoshita lacks at least a swirling chamber and a rectifier, and hence does not perform at least the steps of supplying a powdery material into a swirling chamber and rectifying a swirling flow of the powdery material. The present claims, e.g., claims 1 and 6, recite a swirling chamber and a rectifier, and supplying a powdery material into a swirling chamber and rectifying a swirling flow of the powdery material. These claim features are supported, e.g., in Figs. 4-6, and described at paragraphs [0043]-[0045], and are not new matter.

For at least this reason, Kinoshita does not disclose at least “a swirling chamber, and a rectifier, configured to provide the powdery material in a direction substantially parallel to the central axial line in an equal amount across the process part of the valve seat portion” as recited in amended independent claim 1 and “supplying a powdery material into a swirling chamber, and rectifying a swirling flow of the powdery material to flow in a direction substantially parallel to the central axial line to be provided in an equal amount across the valve-seat portion while holding a laser-processing head in an inclined orientation with respect to the vertical direction and rotating the laser-processing head around the central axial line of the valve seat portion” as recited in amended independent claim 6.

Since Kinoshita does not disclose each and every feature of amended claims 1 and 6, Kinoshita does not anticipate amended claim 1 or claim 6. Accordingly, amended claims 1 and 6 are patentable for at least this reason. Amended claims 2-3 depend from amended claim 1 either directly or indirectly, and are patentable at least for the same reason. Amended claim 11 depends directly from amended claim 6, and is patentable at least for the same reason.

Applicant respectfully traverses the 35 U.S.C. § 103(a) rejection of claim 4 over Kinoshita in view of Satou et al., U.S. Patent No. 6,838,638, ("Satou"), the § 103(a) rejection of claim 5 over Kinoshita in view of Mihashi et al., Japanese Patent No. 2891378, ("Mihashi"), the § 103(a) rejection of claim 7 over Kinoshita in view of Nagano et al., U.S. Patent No. 6,717,106, ("Nagano"), the § 103(a) rejection of claim 8 over Kinoshita in view of Scalzotto, U.S. Patent Publication No. 2002/0003132, ("Scalzotto"), the § 103(a) rejection of claim 9 over Kinoshita in view of Nagano and further in view of Fukui et al., U.S. Patent No. 6,056,827, ("Fukui"), the § 103(a) rejection of claim 10 over Kinoshita in view of Kawasaki et al., U.S. Patent No. 5,571,430, ("Kawasaki"), and the § 103(a) rejection of claim 12 over Kinoshita in view of Yomo et al., Japanese Patent No. 405311385, ("Yomo").

To establish a *prima facie* case of obviousness based on prior art, the Examiner "must articulate...a finding that the prior art include[s] each element claimed, although not necessarily in a single prior art reference, with the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference." M.P.E.P. § 2143.A (8<sup>th</sup> edition, revision 6).

With regard to claim 4, the Examiner's stated rationale for modifying Kinoshita to include a plurality of laser diode arrays as allegedly taught by Satou to render claim 4 allegedly obvious does not overcome the deficiencies of Kinoshita with regard to amended claim 1. Claim 4 depends indirectly from amended claim 1. Kinoshita does not disclose or suggest at least "a swirling chamber, and a rectifier, configured to provide the powdery material in a direction substantially parallel to the central axial line in an equal amount across the process part of the valve seat" as recited in amended claim 1. Satou discloses:

...the laser beam machining device of this embodiment comprises a nozzle (not shown) for supplying the part 1 to be processed with the powdery cladding material 1 making the cladding layer 1' and a nozzle 7 (see FIG. 12) for supplying the surroundings of the cladding material 1 to be irradiated with the laser beams 2 with shielding gas.

Satou column 7, ll. 44-50. Satou is directed to a laser beam machining method. While Satou includes a nozzle, it does not provide any suggestion or motivation to include a swirling chamber and a rectifier. The suggestion to add a swirling chamber and rectifier exists not in the references, but only in the present application, and the Applicant's own teachings cannot be used as a blueprint to modify the prior art and reject the claims. See *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 419 (2007). For at least this reason, no *prima facie* case of obviousness has been established with regard to claim 4.

With regard to claim 5, the Examiner's stated rationale for modifying Kinoshita to include a powdery-material flow out to the flow-out opening with the gas pressure as allegedly taught by Mihashi to render claim 5 allegedly obvious does not overcome the deficiencies of Kinoshita with regard to amended claim 1. Claim 5 depends directly from amended claim 1. As noted above, Kinoshita does not disclose at least "a swirling

chamber, and a rectifier, configured to provide the powdery material in a direction substantially parallel to the central axial line in an equal amount across the process part of the valve seat” as recited in amended claim 1. Mihashi is directed to a configuration for inner and outer discharge jets and the passing of metal weld powder. While Mihashi includes a discharge jet linked to a weld metal powder feed unit, it does not provide any suggestion or motivation to include a swirling chamber and a rectifier. In addition, as was the case with claim 4, the only suggestion to add a swirling chamber and rectifier exists in the present application, and the Applicant’s own teachings cannot be used as a blueprint to modify the prior art and reject the claims. See *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 419 (2007). For at least this reason, no *prima facie* case of obviousness has been established with regard to claim 5.

With regard to claim 7, the Examiner’s stated rationale for modifying Kinoshita to include a rectangular shaped laser beam as allegedly taught by Nagano to render claim 7 allegedly obvious does not overcome the deficiencies of Kinoshita with regard to amended claim 6. Claim 7 depends directly from amended claim 6. As noted above, Kinoshita does not disclose at least a step of “supplying a powdery material into a swirling chamber, and rectifying a swirling flow of the powdery material to flow in a direction substantially parallel to the central axial line to be provided in an equal amount across the valve-seat portion while holding a laser-processing head in an inclined orientation with respect to the vertical direction and rotating the laser-processing head around the central axial line of the valve seat” as recited in amended claim 6. Nagano does not overcome the deficiencies of Kinoshita with regard to amended claim 6. Nagano is directed to a laser sintering apparatus. Nagano provides no suggestion or

motivation to include a method step of supplying a powdery material into a swirling chamber, and rectifying a swirling flow. The only suggestion to add a step of supplying a powdery material into a swirling chamber and rectifying a swirling flow of the powdery material exists in the present application, and the Applicant's own teachings cannot be used as a blueprint to modify the prior art and reject the claims. See *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 419 (2007). For at least this reason, no *prima facie* case of obviousness has been established with regard to claim 7.

With regard to claim 8, the Examiner's stated rationale for modifying Kinoshita to include a rotatable laser-processing head as allegedly taught by Scalzotto to render claim 8 allegedly obvious does not overcome the deficiencies of Kinoshita with regard to amended claim 6. Claim 8 depends directly from amended claim 6. As noted above, Kinoshita does not disclose at least a step of "supplying a powdery material into a swirling chamber, and rectifying a swirling flow of the powdery material to flow in a direction substantially parallel to the central axial line to be provided in an equal amount across the valve-seat portion while holding a laser-processing head in an inclined orientation with respect to the vertical direction and rotating the laser-processing head around the central axial line of the valve seat" as recited in amended claim 6. Scalzotto does not overcome the deficiencies of Kinoshita with regard to amended claim 6. Scalzotto provides no suggestion or motivation to include a method step of supplying a powdery material into a swirling chamber, and rectifying a swirling flow. The only suggestion to add a step of supplying a powdery material in a swirling chamber and rectifying a swirling flow of the powdery material exists in the present application, and the Applicant's own teachings cannot be used as a blueprint to modify the prior art and

reject the claims. See *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 419 (2007). For at least this reason, no *prima facie* case of obviousness has been established with regard to claim 8.

With regard to claim 9, the Examiner's stated rationale for modifying Kinoshita and Nagano to include an offset laser beam as allegedly taught by Fukui to render claim 9 allegedly obvious does not overcome the deficiencies of Kinoshita with regard to amended claim 6. Claim 9 depends directly from amended claim 6. As noted above, Kinoshita and Nagano fail to disclose at least a step of "supplying a powdery material into a swirling chamber, and rectifying a swirling flow of the powdery material to flow in a direction substantially parallel to the central axial line to be provided in an equal amount across the valve-seat portion while holding a laser-processing head in an inclined orientation with respect to the vertical direction and rotating the laser-processing head around the central axial line of the valve seat" as recited in amended claim 6. Fukui does not overcome the deficiencies of Kinoshita with regard to amended claim 6. Fukui is directed to laser decontamination method. Fukui provides no suggestion or motivation to include a method step of supplying a powdery material into a swirling chamber, and rectifying a swirling flow. The only suggestion to add a step of supplying a powdery material in a swirling chamber and rectifying a swirling flow of the powdery material exists in the present application, and the Applicant's own teachings cannot be used as a blueprint to modify the prior art and reject the claims. See *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 419 (2007). For at least this reason, no *prima facie* case of obviousness has been established with regard to claim 9.

With regard to claim 10, the Examiner's stated rationale for modifying Kinoshita to include a configuration whereby a laser beam is positioned behind the powdery material for the purpose of melting the powder material as allegedly taught by Kawasaki to render claim 10 allegedly obvious does not overcome the deficiencies of Kinoshita with regard to amended claim 6. Claim 10 depends directly from amended claim 6. As noted above, Kinoshita does not disclose at least a step of "supplying a powdery material into a swirling chamber, and rectifying a swirling flow of the powdery material to flow in a direction substantially parallel to the central axial line to be provided in an equal amount across the valve-seat portion while holding a laser-processing head in an inclined orientation with respect to the vertical direction and rotating the laser-processing head around the central axial line of the valve seat" as recited in amended claim 6. Kawasaki does not overcome the deficiencies of Kinoshita with regard to amended claim 6. Kawasaki is directed to rotating laser beam. Kawasaki provides no suggestion or motivation to include a method step of supplying a powdery material into a swirling chamber, and rectifying a swirling flow. The only suggestion to add a step of supplying a powdery material in a swirling chamber and rectifying a swirling flow of the powdery material exists in the present application, and the Applicant's own teachings cannot be used as a blueprint to modify the prior art and reject the claims. See *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 419 (2007). For at least this reason, no *prima facie* case of obviousness has been established with regard to claim 10.

With regard to claim 12, the Examiner's stated rationale for modifying Kinoshita to include a configuration whereby the powdery material is being compressively supplied as allegedly taught by Yomo to render claim 12 allegedly obvious does not



overcome the deficiencies of Kinoshita with regard to amended claim 6. Claim 12 depends directly from amended claim 6. As noted above, Kinoshita does not disclose at least a step of “supplying a powdery material into a swirling chamber, and rectifying a swirling flow of the powdery material to flow in a direction substantially parallel to the central axial line to be provided in an equal amount across the valve-seat portion while holding a laser-processing head in an inclined orientation with respect to the vertical direction and rotating the laser-processing head around the central axial line of the valve seat” as recited in amended claim 6. Yomo does not overcome the deficiencies of Kinoshita with regard to amended claim 6. Yomo is directed to a powder feeding apparatus. Yomo provides no suggestion or motivation to include a method step of supplying a powdery material into a swirling chamber, and rectifying a swirling flow. The only suggestion to add a step of supplying a powdery material in a swirling chamber and rectifying a swirling flow of the powdery material exists in the present application, and the Applicant’s own teachings cannot be used as a blueprint to modify the prior art and reject the claims. See *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 419 (2007). For at least this reason, no *prima facie* case of obviousness has been established with regard to claim 12.


In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration of this application, withdrawal of all of the pending rejections, and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Enclosures: Replacement Drawings  
Information Disclosure Statement